

REMARKS

Claims 1 – 5, 8 – 15, and 20 – 22 are pending. Claims 20 and 21 are withdrawn. Claims 1 – 19 have been canceled. New claims 23 – 32 have been added. Upon entry of this amendment, claims 20 – 32 will be pending.

No new matter has been added. Support for new claims 23 – 32 can be found at least in original claims 2 – 5 and 8 – 13, respectively.

Claim rejections - 35 U.S.C. §112, first paragraph

Claims 1– 5 and 8 – 15 have been rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement. Specifically, the Office Action has contended that the claims are not adequately described because the claims are directed to HAS with “one or more amino acid deletions, substitutions, additions or insertions ...”

Applicants traverse the rejections. However, to advance prosecution, Applicants have canceled claims 1– 5 and 8 – 15, and added new claims 23 – 32. Claims 23 – 32 are based on claims 2 – 5 and 8 – 13, respectively, and recite “(ii) a DNA encoding a polypeptide having an amino acid sequence of the hyaluronic acid synthase” and do not recite “having one or more amino acid deletions, substitutions, additions or insertions.” Accordingly, the rejections are moot, and withdrawal of the rejections is requested.

Claim rejections - 35 U.S.C. §112, first paragraph

Claims 1– 5 and 8 – 15 have been rejected under 35 U.S.C. §112, first paragraph, as allegedly not reasonably providing enablement for any HAS from any species or any sequence variants thereof.

Applicants traverse the rejections. However, to advance prosecution, Applicants have canceled claims 1– 5 and 8 – 15, and added new claims 23 – 32. Claims 23 – 32 are based on claims 2 – 5 and 8 – 13, respectively, and recite “(ii) a DNA encoding a polypeptide having an amino acid sequence of the hyaluronic acid synthase” and do not recite “having one or more amino acid deletions, substitutions, additions or insertions.” The HAS recited in the claims is

HAS of chlorella virus origin. The specification shows that transformants comprising the chlorella virus HAS genes are useful in transforming plants according to the claimed invention. Thus, Applicants submit that the claimed invention is enabled. Accordingly, the rejections are moot, and withdrawal of the rejections is requested.

Claim rejections - 35 U.S.C. §103

Claims 1– 5, 8 – 15, and 22 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Smeekens et al. (US6,147,280) in view of DeAngelis et al. (Hyaluronan Synthase of Chlorella Virus PBCV-1, *Science* 1997: Vol. 278., pp. 1800 – 1803) and further in light of Akasaka (US4,801,539) and Mattes et al. (US5,985,668). Applicants traverse the rejections.

Applicants point out that the claims, as amended, require that the hyaluronic acid synthase is derived from a chlorella virus. The chlorella virus HAS genes are particularly useful in transforming plants so as to impart to them the ability to produce hyaluronic acid. Applicants hereby submit a Declaration under 37 CFR § 1.132 signed by Shigeo Shibatani, the first named-inventor of the present application. The Rule 132 Declaration shows the results of experiments of the successful transformation of plant cells and a plant with two types of chlorella virus-originated HAS genes and the unsuccessful transformation with HAS genes derived from bacteria and mice origins. Accordingly, the successful transformation is attributable to HAS genes of chlorella virus origin. Because HAS genes of chlorella virus origin is not taught or suggested by any of the cited references, a *prima facie* case of obviousness has not been established.

Moreover, Applicants submit that there is a lack of reasonable expectation of success even if there was a motivation to modify Smeekens. Smeekens discloses a method of transforming a plant using bacterial genes only. It does not teach or suggest using a gene of chlorella virus origin. As demonstrated in the Rule 132 Declaration, the successful transformation depends on the origin or the gene. As such, one of ordinary skill in the art would not have had a reasonable expectation of success by modifying Smeekens to use a different gene, namely HAS gene, from a different origin, namely chlorella virus.

Therefore, for at least the reasons stated above, a *prima facie* case of obviousness has not been established. Withdrawal of the rejections is requested.

CONCLUSION

The claims are believed to be allowable.

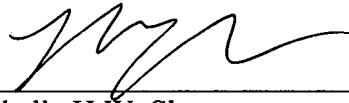
The Examiner is invited to contact the undersigned at (202) 220-4200 to discuss any matter concerning this application.

In the event that the filing of this paper is deemed not timely, Applicants petition for an appropriate extension of time. The Office is authorized to charge any additional fees or credit any overpayments to deposit account 11-0600 of Kenyon & Kenyon LLP.

Respectfully submitted,

Dated: November 6, 2007

By:



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